

## MALE GENITALIA IN THE SUB-FAMILY CHEILOSIINAE.

## GENUS BRACHYOPA

(DIPTERA: SYRPHIDAE)

YALE S. SEDMAN, *Department of Biological Sciences,  
Western Illinois University, Macomb.*

In an earlier paper (Sedman, 1959), the genitalia of members of the genus *Chrysogaster s. l.* were discussed and a re-classification suggested. The genus *Brachyopa* Meigen together with *Chrysogaster*, comprise the sub-tribe Chrysogastrina and this paper concludes the treatment of this sub-tribe.

Genus **Brachyopa** Meigen

There are two subgenera in this genus, *Brachyopa s. s.* and *Hammerschmidtia* Schummel. The latter group contains three species while the former contains twenty-one. The one species of *Hammerschmidtia* studied is the genotype and is Holarctic in distribution. The genotype of *Brachyopa s. s.* and two Nearctic species were included in this study. This group of flies, while certainly not rare, is rather uncommon in collections and several species are known from very few specimens.

The following synonymy summarizes the classification of this group as indicated by the study of the male genitalia:

**Brachyopa** Meigen

*Brachyopa* Meigen, 1822, System. Beschreib. 3: 260 (genotype - *Rhingia bicolor* Fallen).

**Hammerschmidtia** Schummel

*Hammerschmidtia* Schummel, 1834, Isis 7: 740.

*Male Genitalia*

The chief character linking these groups together is the configuration of the axial system which is composed of the sustentacular apodeme and chitinous box. There is an ejaculatory hood, but it lacks a definite articulation with the chitinous box. The species are unusual in that the chitinous box is pubescent over most of the surface.

Subgenus **Brachyopa** Meigen**B. (B.) bicolor** (Fallen) (Figs. 1, 2)

1817. Dipt. Succ., Syrphici p. 32 (*Rhingia*); 1930. Sack, in Lindner, Flieg. der Pal. Reg. 31: 129.

Epandrium deeper than long, subtriangular. Style with many apical bristles; very broad, seemingly divided into two areas, the more dorsal area thumb-like and bearing a ventral lightly sclerotized plate-like extension without a clearly defined articulating surface; with spines on inner walls of styli projecting beyond apex. Cereus small.

Penis sheath rounded ventrally; elongate and highly modified apically giving rise to the superior and inferior lobes without an articulating surface; the basal

one half to three-fourths of the ventral margin is wrinkled. Superior lobe tongue-like, acuminate. Inferior lobe divided into two acuminate projections.

Sustentacular apodeme narrow, relatively short. Chitinous box with an ejaculatory hood-like structure, but without a definite articulating surface between these two; developed vertically with a ventral pyramidal base; dorsal, tapering with an apical, downward projecting portion; entire structure well sclerotized but with two isolated membranous areas medially and dorso-apically; upper one-half to two-thirds covered with delicate, short, dense, clear, appressed hair.

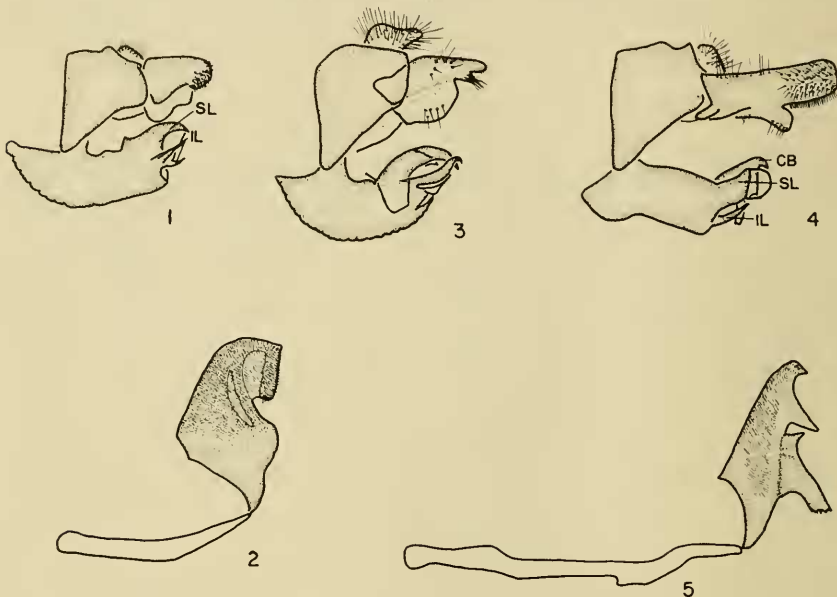


Fig. 1, *Brachyopa (Brachyopa) bicolor* (Fall.), male genitalia; fig. 2, *B. (B.) bicolor* (Fall.), axial system; fig. 3, *B. (B.) notata* Osten Sacken, male genitalia; fig. 4, *B. (Hammerschmidtia) ferruginia* (Fall.), male genitalia; fig. 5, *B. (H.) ferruginia* (Fall.), axial system. Abbreviations: CB-chitinous box, IL-inferior lobe, SL-superior lobe.

**B. (B.) notata** Osten Sacken (Fig. 3)

1876. Bull. Buffalo Soc. Nat. Hist. 3: 68; 1922. Curran, Ann. Ent. Soc. Amer. 15: 251.

Like *bicolor* (Fall.) but differing as follows: apex of style bilobed, lower lobe with a thick brush ventrally and hair differently arranged; superior and inferior lobes more elongate; chitinous box terminates apically as a pronounced beak and bears medially a pair of arms.

**B. (B.) perplexa** Curran

1922. Can. Ent. 54: 117; 1922. Curran, Ann. Ent. Soc. Amer. 15: 249.

The male genitalia of this species are identical with those of *notata* O. S.

Subgenus **Hammerschmidtia** Schummel

**B. (H.) ferruginia** (Fallen) (Figs. 4, 5)

1817. Dipt. Succ., Syrphici, p. 34 (*Rhingia*).

Epandrium deeper than long, subtriangular. Style elongate palmate, dorsal and ventral margins parallel; with a short ventrally projecting thumb at the middle of the ventral surface; with long fine hairs dorso-basally and on the thumb; with short hairs anterior to thumb on apical one-third of style proper, and ventral to this area, an even fringe of hairs. Cersus small.

Penis sheath rectangular. Superior lobe undifferentiated from penis sheath and without a definite joint or articulation.

Sustentacular apodeme elongate and very narrow. Chitinous box much as in *B. (B.) bicolor* (Fall.); with a definite pair of arms originating on the middle of the apical margin; immediately dorsal to this, a narrow membranous area with a small heavily sclerotized plate above it; the apico-dorsal one-third of the chitinous box "C" shaped; basad of the "C" is a membranous area; basally and on the dorsal three-fourths of the chitinous box there are found the same type of hairs as found in *bicolor* (Fall.).

These two subgenera are very closely related and there are only very minor differences in the genitalia. The differences in the adult characteristics are also minor although Curran (1922) has presented arguments to the contrary.

The relationship of these subgenera to the rest of the Chrysogastrina is based on the construction and elaboration of the chitinous box which lacks an articulating surface to separate it from the epaculatory hood when present. Both *Chrysogaster s.l.* and *Brachyopa s.l.* are primitive in general features of the morphology of the genitalia. The presence of generalized inferior and superior lobes and the primitive condition of the epandrium in the species considered as most closely approximating the most generalized condition of recent species is also taken as evidence for the placement of *Brachyopa s.l.* as members of this subtribe.

#### BIBLIOGRAPHY

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### LASIOPTERA ALLIOIDES, A NEW GALL MIDGE ON GRASS

(DIPTERA: CECIDOMYIIDAE)

A. EARL PRITCHARD, *University of California, Berkeley*

The bulbous galls (Fig. 1) formed at the bases of stems of *Paspalum distichum* are so well known in the West that Robbins, Bellue, and Ball (1941) referred to these galls in their book "Weeds of California" as often being characteristic of this grass. Dr. Paul Arnaud, California State Department of Agriculture, and Dr. E. S. Ross, California Academy of Sciences, reared adults from larvae that make these galls, and they are here described.

The gall-maker belongs to the genus *Lasioptera* Meigen *sens. lat.* Felt based his division of this genus on the wing venation and number of palpal segments, while the European workers, Rübbsaamen and